

AMENDMENT TO THE CLAIMS

The listing of claims will replace all prior versions and listings in the application.

Listing of Claims:

1. (Currently Amended): A method of detecting at least one characteristic of a signal of interest within an input signal, comprising:

 multiplying at least one set of samples from the input signal by at least one set of samples representing a complex conjugate of the input signal to obtain a series of correlation samples;

 summing sets of one or more consecutive correlation samples to obtain a series of pulse sums, each pulse sum having an associated start time; and

 integrating a plurality of sets of non-consecutive pulse sums, with the start times of each successive non-consecutive pulse sum in a given set being separated from a preceding pulse sum in the set by an pulse repeat value associated with the set, to obtain [[a]] respective search

value values for the plurality of sets of non-consecutive pulse sums; and

selecting an optimal search value as representing a pulse repeat value for the signal of interest equal to that separating pulse sums associated with the set of non-consecutive pulse sums represented by the optimal search value.

2. (Currently Amended): A method as set forth in claim 1, further comprising the step of ~~comparing~~ accepting the pulse repeat value for the signal of interest if the search value meets to a predetermined threshold value.

3. Cancelled.

4. (Currently Amended): A method as set forth in claim [[3]]] 1, wherein ~~the~~ each search value has an associated start delay, based upon the start time associated with a first of the set of non-consecutive ~~plurality of~~ pulse sums represented by the search value.

5. (Currently Amended): A method as set forth in claim 4, wherein the step of summing a plurality of sets of non-consecutive pulse sums is repeated for a series of associated start delays ~~and pulse repeat intervals~~ to obtain plurality of search values, each with an associated start delay and pulse repeat interval.

6. (Currently Amended: A method as set forth in claim 5, further comprising the steps of comparing each search value to a threshold value and accepting the associated values for the start delay and pulse repeat interval as ~~signal~~ representing characteristics of the signal of interest where the search value exceeds the threshold.

7. (Original): A method as set forth in claim 1, wherein the set of input signal samples are derived from the input signal as it is received at a first location, and the set of complex conjugate samples is derived from the input signal as it is received at a second location.

8. (Currently Amended): A method as set forth in claim 7, wherein the signal of interest is associated with a signal source, having an associated direction in relation to the first location, and the associated direction is determined from a phase value associated with the input signal.

9. (Currently Amended): A cross-correlation detection system that detects at least one characteristic of a signal of interest comprising:

a digital multiplier that multiplies at least one set of samples from the input signal by at least one set of samples representing a complex conjugate of the input signal to obtain a series of correlation samples;

at least one digital integrator that sums sets of one or more consecutive correlation samples to obtain a series of pulse sums, each pulse sum having an associated start time;
and

a digital signal processor that integrates a plurality of sets of non-consecutive pulse sums , with the

start times of each successive non-consecutive pulse sum in a given set being separated from a preceding pulse sum in the set by a pulse repeat value associated with the set, to obtain [[a]] respective search value values for the plurality of sets of non-consecutive pulse sums and selects an optimal search value as representing a pulse repeat value for the signal of interest equal to that associated with the set of non-consecutive pulse sums represented by the optimal search value.

10. (Currently Amended): A system as set forth in claim 9, wherein the digital signal processor ~~compares~~ accepts the pulse repeat value for the signal of interest if the search value meets to a predetermined threshold value.

11. (Currently Amended): A system as set forth in claim 9, wherein the system is implemented as part of an interferometer that determines the direction of a ~~detected signal~~ the signal of interest from the system.

12. (Cancelled).

13. (Currently Amended): A computer program product, operative in a data processing system, that detects at least one characteristic of a signal of interest within an input signal, comprising:

a digital multiplication function that multiplies at least one set of samples from the input signal by at least one set of samples representing a complex conjugate of the input signal to obtain a series of correlation samples;

at least one integration function that sums sets of one or more consecutive correlation samples to obtain a series of pulse sums, each pulse sum having an associated start time; and

a search function that integrates a plurality of sets of non-consecutive pulse sums, with the start times of each successive non-consecutive pulse sum in a given set being separated from a preceding pulse sum in the set by a pulse repeat value associated with the set, to obtain $[[a]]$ respective search value values for the plurality of sets of

non-consecutive pulse sums and selects an optimal search value as representing a pulse repeat value for the signal of interest equal to that associated with the set of non-consecutive pulse sums represented by the optimal search value.

14. (Currently Amended): A computer program product as set forth in claim 13, wherein the search function ~~compares~~ accepts the pulse repeat value for the signal of interest if the selected search value meets ~~to~~ a predetermined threshold value.

15. (Currently Amended): A computer program product as set forth in claim 13, wherein each ~~pulse sum has an associated start time and the~~ search value has an associated start delay, based upon the start time associated with a first of ~~the plurality~~ the set of non-consecutive pulse sums represented by the search value.

16. Cancelled.

17. (Currently Amended): A computer program product as set forth in claim [[16]] 15, wherein the search function repeatedly sums a plurality of sets of non-consecutive pulse ~~sum~~ sums for a series of associated start delays and ~~pulse repeat intervals~~ to produce a plurality of search values, each with an associated start delay and pulse repeat interval.

18. (Original): A computer program product as set forth in claim 17, wherein the search function compares each search value to a threshold value and accepts the associated values for the start delay and pulse repeat interval as ~~signal~~ representing characteristics of the signal of interest where the search value exceeds the threshold.

19. (Original): A computer program product as set forth in claim 13, wherein the set of input signal samples are derived from the input signal as it is received at a first antenna, and the set of complex conjugate samples is derived from the input signal as it is received at a second antenna.

20. (Currently Amended): A computer program product as set forth in claim 19, wherein the signal of interest is associated with a signal source, having an associated direction in relation to the first antenna, and the associated direction is determined from a phase value associated with the input signal.